

(12) **UK Patent Application** (19) **GB** (11) **2 172 131 A**  
 (43) Application published 10 Sep 1986

(21) Application No 8802072

(22) Date of filing 28 Jan 1986

(30) Priority data

(31) 8502346

(32) 30 Jan 1985

(33) GB

(71) Applicant

GCC (Cambridge) Limited (United Kingdom),  
 66 High Street, Sawston, Cambridge CB2 4BG

(72) Inventors

Ananda Sarath Nanayakkara  
 Jalil Mirza

(74) Agent and/or Address for Service

Keith W Nash & Co,  
 Pearl Assurance House, 90-92 Regent Street,  
 Cambridge CB2 1DP

(51) INT CL<sup>4</sup>

G06K 6/00

(52) Domestic classification (Edition II):

G4H 13D 14A 14D 1A TG  
 U1S 2271 G4H

(56) Documents cited

GB A 2154346

GB 1448141

EP A2 0127424

GB A 2123588

GB 1408303

US 4296404

GB A 2118341

GB 1356448

US 4114140

GB A 2092345

GB 1284036

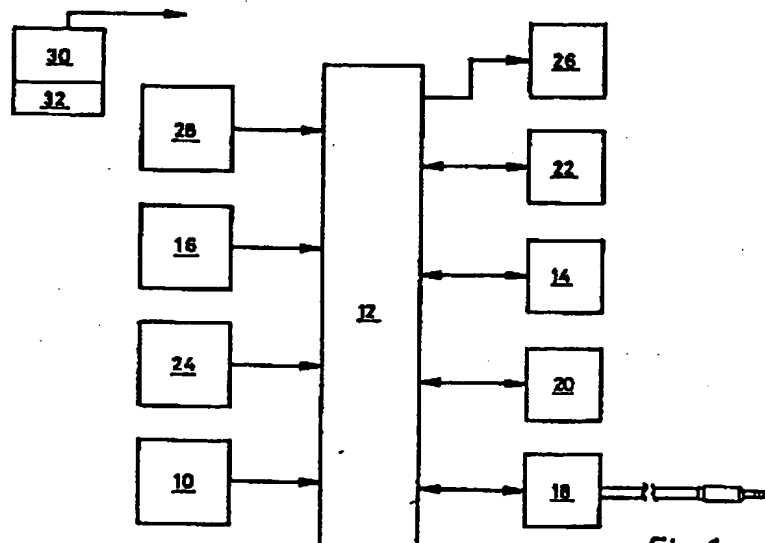
(58) Field of search

G4H

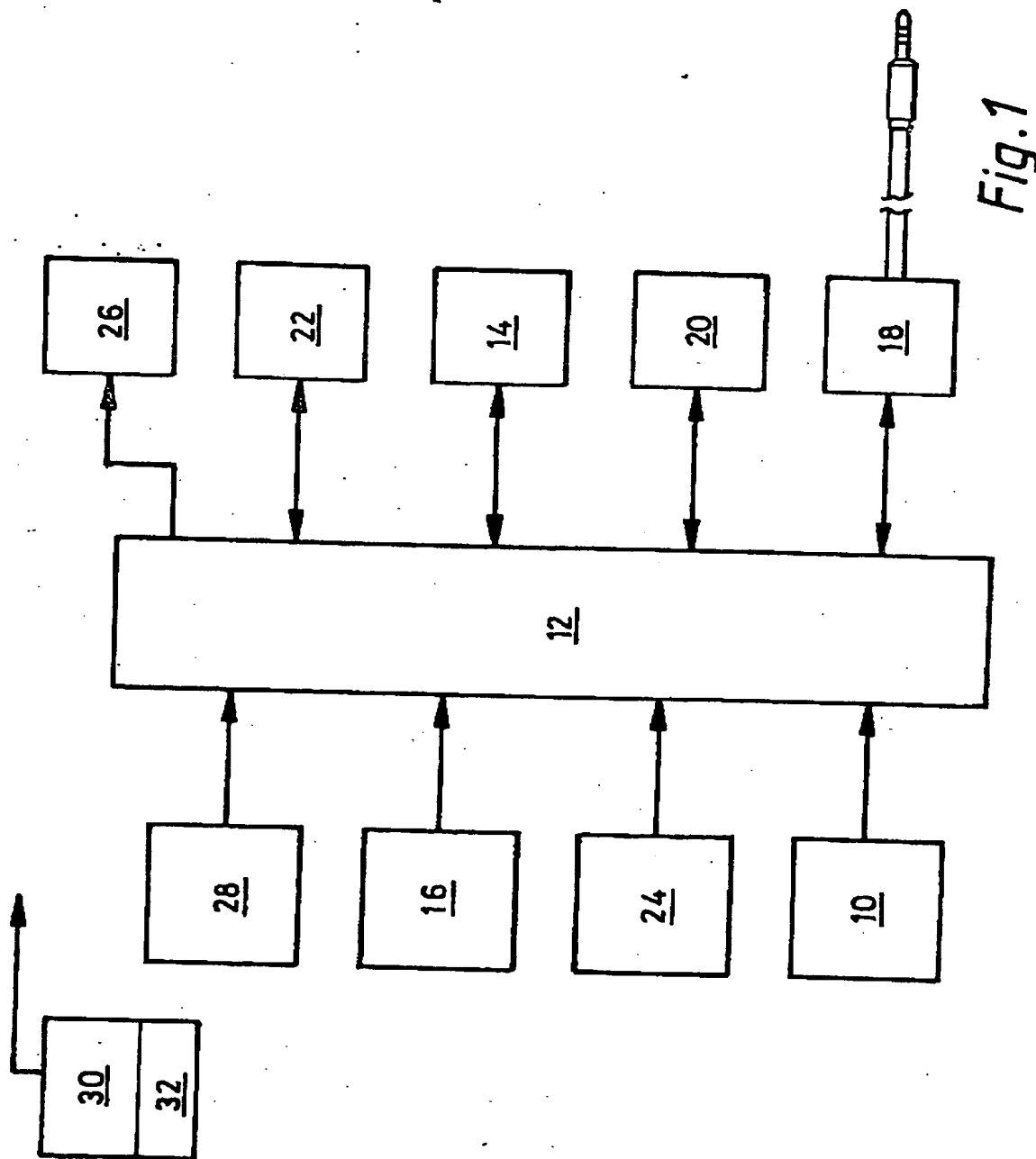
Selected US specifications from IPC sub-class G06K

(54) **Credit card checking method and system**

(57) A credit card checking system wherein a credit card reader (10) is connected to a microprocessor (12) associated with a programmable memory (14) into which data identifying stopped credit cards can be inserted via a keyboard (16) or a modem link (18), the processor including a comparator for comparing the data read from an inserted card with the stored data, and a warning indicator (26) for indicating that an inserted card is a stopped card.



**Fig.1**



2172131

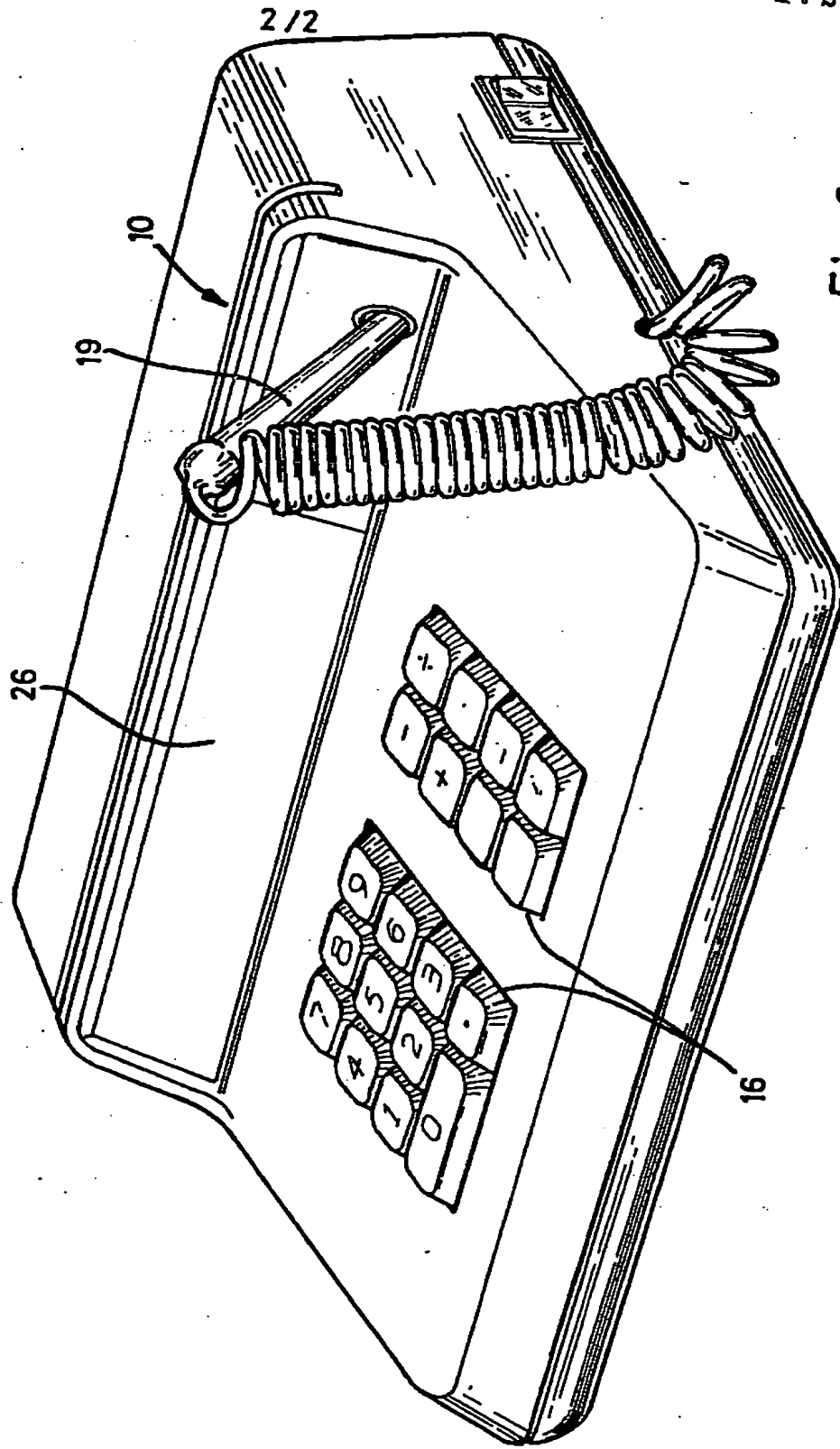


Fig.2

## SPECIFICATION

### Credit card checking method and system

#### 5 *Field of the invention*

This invention relates to a credit card checking method and system.

#### *Background to the invention*

- 10 It is well known that finance companies regularly lose large sums of money due to the illegal use of stolen, lost and forged credit cards. In some instances, losses are minimised to a given amount per transaction, typically £50, because the retailer is required to check with the finance company before accepting a card for a sale in excess of this amount. However, this fact is generally well known, and the user of a stopped card can often still make numerous illegal purchases for less than the limiting amount.

- The numbers of most wanted stopped cards are also the subject of regular lists distributed by the finance companies to retailers. However, these are invariably late in distribution, commonly as late as a month after the finance company is first informed that a card is lost or stolen. Moreover, retailers often fail to consult the list when making a credit card sale.

- 30 It is therefore an aim of this invention to provide an improved method and system for checking credit cards.

#### *The invention*

- 35 According to one aspect of the invention, a method of checking credit cards comprises the steps of:-

- (a) storing a list of identification data relating to stopped credit cards in a memory;
- 40 (b) inserting a credit card in a card reader to read the card identification incorporated in the magnetic stripe thereof;
- (c) comparing the identification data read from the card with the list of identification data stored in the memory;
- 45 (d) outputting a warning signal if there is correspondence of the read data with data on the list;
- (e) updating the memory to maintain substantial correspondence between the identification data on the list and the stopped cards of which a finance company are currently advised.

- According to another aspect of the invention, a credit card checking system comprises:-

- (a) a programmable memory;
- (b) means for entering into the memory a list of credit card identification data;
- 60 (c) a card reader adapted to read the identification data embodied in the magnetic stripe of a credit card entered into the reader;
- (d) comparator means for comparing the data read from a card entered into the reader
- 65 with the list of data;

(e) means for outputting a warning signal if the read data corresponds with data on the stored list.

- 70 The comparator means is preferably incorporated in a microprocessor associated with the programmable memory. An associated bar code reader or keyboard enables entry via the processor of data relating to stopped cards, and the means for inputting data to the memory may also include a modem interface
- 75 through which data relating to stopped cards can be downloaded directly by the finance company.

- The microprocessor may conveniently also have an input from a real time clock and, if desired, at least some of the data entered into the memory may be stored in association with a time recordal for example in conjunction with data entry via a modem. The clock may also be used to verify the expiry date of a card.

- The memory itself is preferably a non-volatile store. A volatile store is preferably also provided for use as a temporary store and/or scratch pad.

- 90 The operation of the microprocessor system may conveniently be controlled by software residing in a monitoring means which includes a read-only memory (ROM).

- 95 A preferred display is of the LCD type; the output warning signal may be fed to this display, for example to display a warning message, or to a flashing light or analogous signal indicator or the like which may or may not be incorporated in the LCD display.

- 100 The microprocessor may also receive an input from a calculator interface so that, when switched to a calculator mode, the system is able to perform addition, subtraction, multiplication and division processes relating to sales, including VAT calculations. It is conceivable that the calculator interface may communicate with an electronic cash register and/or a printer to print a sales voucher.

- 110 The system will preferably have a power supply unit which includes a battery back-up enabling the retention of stored information in the event of temporary failure of the mains power supply.

- 115 The invention enables a retailer, by the simple and non-time consuming expedient of inserting a credit card into a card reader, to be given immediate clearance on the entered card. This clearance may be positively indicated, or be apparent due to absence of a warning signal.

- 120 Where an automatic telephone data link is provided with the finance company for downloading data, it may be practicable to use the same link for checking and providing clearance on sales in excess of £50 or other appropriate limiting sum, and this check may be made automatic when an associated calculator unit inputs a sales amount in excess of the limiting
- 125 figure. In such a case, a full register of the
- 130

cards of a particular credit company or bank may be stored, including the stopped cards list.

#### 5 Description of drawings

A practical arrangement of credit card checking system in accordance with the invention is shown in the accompanying drawings, in which:-

- 10 Figure 1 is a block circuit diagram; and  
Figure 2 is a perspective view of a machine embodying the system.

#### Description of embodiment

- 15 In the illustrated system, a magnetic credit card reader 10 of the conventional insertion type with manual Track 2 wipe, but in the form of the basic mechanism only, is adapted to read the magnetic stripe on an entered  
20 credit card and feed an output signal, containing information identifying the card number, to a microprocessor 12, such as an eight bit 6502 CPU. The microprocessor 12 is in communication with a non-volatile store 14 which  
25 contains a list of data identifying stopped credit cards. A convenient non-volatile store has four (expandable to sixteen) memory banks, for example one for each finance company, each bank being capable of storing up  
30 to two thousand numbers and also being capable of upgrading to hold more numbers.

- The numbers of stopped cards may be entered into the store 14 via a twenty four key keypad 16, and possibly also via a modem  
35 interface 18 through which identification numbers of stopped cards may be downloaded directly from a finance company. Preferably, however, the numbers of stopped cards can be entered via a bar code reader 19 (see Fig.  
40 2), e.g. an optical reflection sensitive pen with decoding software for interleaved 2 of 5 bar codes, which reads a list of numbers supplied by the finance company in bar code form. A template to guide the pen over the printed bar  
45 code may be provided. A volatile store 20 is also provided at a temporary memory and/or scratch pad. A serial port for attachment of a modem may alternatively also enable attachment of a printer to print a point-of-sale  
50 docket.

The microprocessor 12 also communicates with a calculator interface 22, inputs for calculations being possible via the keyboard 16.

- The microprocessor also receives an input  
55 from a real time clock 24, and provides outputs to an LCD display unit 26, for example a 2x32 character display, which normally displays the date and time, but also displays the results of calculations, carried out when the  
60 system is switched at the keyboard to the calculator mode.

- The display 26 may also incorporate a warning indicator, such as a flashing light which operates when a comparator in the processor finds an entered and read card to pos-

sess an identifying number corresponding with data on the list of stopped cards. However, the warning indicator may be incorporated prominently elsewhere in the system, if desired. Most preferably, the display 26 will respond to an entered card by displaying an appropriate message indicative of the result of the check.

- 70

The system is controlled by a monitoring unit 28 wherein the control program resides in a ROM. This controls all system operations.

- 75 Supply of power is via a power unit 30 which includes a battery back-up 32, conveniently mains rechargeable, connected to those  
80 parts of the system where memory retention is required in the event of a temporary failure of the mains power supply.

- In use, a retailer may be supplied with a machine (see Fig. 2) pre-programmed with a  
85 "Hotlist" of numbers of several thousand stopped credit cards. In the event of a credit card transaction, the retailer runs the card through the machine, which verifies the card and displays an appropriate message. The real  
90 time clock 24 may be employed for automatic verification of the expiry date of the card. Re-entry is provided for in the event of failure to read the card.

- Updating of the stored Hotlist is by means  
95 of the bar code reader, which is used to enter fresh numbers into the memory from a list supplied by the finance company in bar code form. Deletion of numbers from the stored  
100 Hotlist is also possible in this way (or by use of the keyboard). In the event of memory overflow, oldest numbers on the stored Hotlist are deleted first. However, expansion to 256  
105 memory banks, each storing 2000 card numbers, is readily possible, for example by means of an add-on unit.

It is apparent that the system may also serve to verify cheque guarantee cards, especially when bank cards are intended to serve a dual purpose.

- 110 Since all credit card transactions can be instantly verified at the point of use, i.e. the retailer, it should be possible to reduce the number of occasions in which authorisation direct from the finance company is required before acceptance of a card for performance of  
115 a transaction.

- The above described and illustrated system is by way of example and may be modified in various ways within the scope of the invention hereinbefore defined.

120

#### CLAIMS

1. A method of checking credit cards comprising the steps of:-

- 125 (a) storing a list of identification data relating to stopped credit cards in a memory;  
(b) inserting a credit card in a card reader to read the card identification incorporated in the magnetic stripe thereon;  
130 (c) comparing the identification data read

from the card with the list of identification data stored in the memory;

(d) outputting a warning signal if there is correspondence of the read data with data on the list;

(e) updating the memory to maintain substantial correspondence between the identification data on the list and the stopped cards of which a finance company are currently advised.

2. A method according to claim 1, including the step of inserting data into the memory and updating said data via a modem link.

3. A method according to claim 2, including the step of using the modem link for the additional purpose of verifying credit on an inserted card.

4. A method of checking credit cards substantially as hereinbefore described.

5. A credit card checking system comprising:-

(a) a programmable memory;

(b) means for entering into the memory a list of credit card identification data;

(c) a card reader adapted to read the identification data embodied in the magnetic stripe of a credit card entered into the reader;

(d) comparator means for comparing the data read from a card entered into the reader with the list of data;

(e) means for outputting a warning signal if the read data corresponds with data on the stored list.

6. A system according to claim 5, wherein the comparator means is incorporated into a microprocessor associated with the programmable memory.

7. A system according to claim 5 or claim 6, including a keyboard for entry of data into the programmable memory.

8. A system according to any of claims 5 to 7, including a modem interface via which data can be input to the programmable memory.

9. A system according to claim 6 or any claim appendant thereto, wherein the microprocessor incorporates a real time clock and at least some data can be entered into the memory in association with storage of time recordal.

10. A system according to any of claims 5 to 9, wherein the programmable memory is a non-volatile store and the system includes a volatile store for use as a temporary store and/or scratch pad.

11. A system according to claim 6 or any claim appendant thereto, wherein the microprocessor is controlled by a programmed monitoring means which includes a read-only memory.

12. A system according to any of claims 5 to 11; including an LCD display.

13. A system according to any of claims 5 to 12, including a bar code reader for entry of information into the memory.

14. A system according to claim 6 or any claim appendant thereto, wherein the microprocessor has a calculator interface via which the system can be switched to a calculator mode.

15. A system according to claim 14, wherein the calculator interface communicates with a cash register.

16. A system according to any of claims 5 to 15, including a power supply means incorporating a battery back-up.

17. A credit card checking system substantially as hereinbefore described with reference to the accompanying drawings.

Printed in the United Kingdom for  
Her Majesty's Stationery Office, Dd 8818935, 1986, 4235.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.